09/867,662 MAIL STOP AF
Art Unit: 1762
Response to Final Action mailed July 17, 2004

Amendments to the Claims

Please amend the claims as follows:

This listing of the claims replaces all previous versions.

1. (currently amended) A method of making silica waveguides, comprising:

depositing optical films by PECVD (Plasma Enhanced Chemical Vapour Deposition) in the presence of a silicon-containing gas, an oxidation gas, a carrier gas, and PH_3 as a doping gas, said optical films having refractive indices differing by an amount delta-*n*;

setting a total pressure of said gases and flow rates of said silicon-containing gas, said oxidation gas, and said carrier gas at constant values to minimize absorption peaks in FTIR spectra; and

adjusting the flow rate of said doping gas while maintaining said total pressure and said flow rates at constant values to achieve a target value for said delta-n.

2. (cancelled)

3. (cancelled)

4. (cancelled)

5. (cancelled)

6. (currently amended) A method as claimed in claim [[5]] 1, wherein said silicon-containing gas is SiH_4, said oxidation gas is N_2O, and said carrier gas is N_2.

7. (cancelled)

8. (cancelled)

9. (cancelled)

10. (cancelled)

11. (previously presented) A method as claimed in claim 6, wherein the SiH_4 gas flow is fixed at about 0.20 std litre/min; the N_2O gas flow is fixed at about 6.00 std litre/min; the N_2 gas flow is fixed at 3.15 std litre/min; and the PH_3 gas flow, is varied among the following values: 0.00

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std litre/min; 0.12 std litre/min; 0.25 std litre/min; 0.35 std litre/min; 0.50 std litre/min; and 0.65 std litre/min.

12. (previously presented) A method as claimed in claim 11, wherein the total deposition pressure is fixed at about 2.60 Torr.

13. (original) A method as claimed in claim 1, further comprising subjecting the films to a post deposition thermal treatment.

14. (original) A method as claimed in claim 13, wherein said post thermal treatment takes place at a temperature between 400 and 1200°C.

15. (original) A method as claimed in claim 14, wherein said thermal treatment takes place at about 800°C.

16. (original) A method as claimed in claim 15, wherein said thermal treatment takes place in the presence of nitrogen.

17. (original) A method as claimed in claim 2, wherein said films are deposited at a temperature between between 100 and 650°C.

18. (original) A method as claimed in claim 17, wherein said films are deposited at a temperature of about 400°C.

19. (cancelled)

20. (currently amended) A method of making silica waveguides, comprising:

defining a six-dimensional space wherein five dimensions thereof correspond to first, second, third, fourth, and fifth respective independent variables, of which said first, second, third, and fourth independent variables relate respectively to the flow-rate of a raw material gas, an oxidation gas, a carrier gas, and a doping gas, and said fifth independent variable relates to total pressure, and a sixth dimension relates to observed FTIR characteristics;

depositing optical quality films having refractive indices differing by an amount delta-n by PECVD (Plasma Enhanced Chemical Vapour Deposition) while maintaining said first, second, third and fifth independent variables constant at values selected to optimize said observed FTIR characteristics; and

varying said fourth independent variable to obtain the desired delta-n without changing

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said observed FTIR characteristics: and

wherein said doping gas is selected from the group consisting of PH_3; B_2H_6; AsH_3; TiH_4; GeH_4; SiF_4; and CF_4..

21. (previously presented) A method as claimed in claim 20, wherein said optical films are silica films.

22. (cancelled)

23. (previously presented) A method as claimed in claim 21, wherein said raw material gas is selected from the group consisting of: SiH_4; $SiCl_4$; SiF_4; Si_2H_6; SiH_2Cl_2; $SiCl_2F_2$; SiH_2F_2.

24. (previously presented) A method as claimed in claim 23, wherein said oxidation gas is selected from the group consisting of N_2O; O_2; NO_2; H_2O; H_2O_2; CO; CO_2.

25. (previously presented) A method as claimed in claim 24, wherein said carrier gas is selected from the group consisting of N_2; He; Ne; Ar; and Kr.

26. (cancelled)

27. (original) A method as claimed in claim 20, further comprising carrying out a post-deposition thermal treatment at a temperature between 400 and 1200°C.

28. (original) A method as claimed in claim 27, wherein said post-deposition treatment is carried out in the presence of nitrogen.

29. (original) A method as claimed in claim 27, wherein said post-deposition treatment is carried out at a temperature of about 800°C.

30.(currently amended) A method as claimed in claim 20, wherein the raw material gas flow is fixed at about 0.20 std litre/min; the oxidation gas flow is fixed at about 6.00 std litre/min; the carrier gas is nitrogen and the nitrogen gas flow is fixed at about 3.15 std litre/min; and the dopant gas flow, is varied among the following values: 0.00 std litre/min; 0.12 std litre/min; 0.25 std litre/min; 0.35 std litre/min; 0.50 std litre/min; and 0.65 std litre/min.

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